CLASSIFICATION CONFIDENTIAL

CENTRAL INTELLIGENCE AGENCY
INFORMATION REPORT
FOREIGN DOCUMENTS OR RADIO BROADCASTS

CONFIDENTIAL

REPORT
CD NO.

COUNTRY	USSR
SUBJECT	Tractor technology
HOW PUBLISHED	Monthly periodical
WHERE PUBLISHED	Moscow, USSR
DATE PUBLISHED	February 1948
LANGUAGE	Russian

DATE OF INFORMATION 1948

DATE DIST. 19 January 1949

NO. OF PAGES 3

SUPPLEMENT TO REPORT NO.

THIS IS UNEVALUATED INFORMATION

SOURCE Avtomobil'naya Promyshlennost', No 2, 1948. (Translation specifically requested.)

MODERNIZATION OF TECHNOLOGICAL PROCESSES

L. E. Makoyed, Chief Engineer,
Stalingrad Tractor Plant

Mechanization of Casting Shops

In the past, only ground conveyers of the L-1200, L-1400, and T-1600 type were used in the casting shops of the Stalingrad Tractor Plant. These conveyers occupy a large area, are extremely complex in construction (over 5,000 parts), and are extremely costly.

N. P. Popov and N. G. Chetverikov, workers at the Stalingrad Tractor Plant, have worked out a design for a suspension conveyer for boxless molding. The new conveyer (photograph available in CIA as Photo Accession No 3359) was put into operation in the steel-shaping (stalefasonnyy) shop in December 1946.

The design of the suspension conveyer is very simple, requires one fifth the labor to set up, and is three times as cheap as the ground conveyer. It occupies half the space of the ground conveyer. The disposition of the driving stations and chains above the floor precludes the bearing unit's being hit by loam, scrap or splattering of liquid metal. Thanks to this disposition, accidents and lost time on the conveyer caused by jamming of the working parts have been completely eliminated, making upkeep and service many times cheaper. The conveyer works smoothly without jerking.

The suspension conveyer has four basic units: the driving station, a monorail track, a driving chain with carriages and ingot chairs, and a tension station.

The platform of the driving station is situated 2,200 millimeters above the floor level. The operating chain of the conveyer is suspended on roller suspension arms, to which are attached Z-shaped ingot chairs with platforms for the mold boxes. The chain is 105 meters long. The speed of the conveyer

CLASSIFICATION CONFIDENTIAL

STATE	X	NAVY	X	NSRB	DISTRIBUTION
ARMY	X	AIR	X	FBI	

CONFIDENTIAL

is 5 meters per minute. Stopping and starting of the conveyer is accomplished by means of a button arrangement from the pouring, knocking-out, and molding stages. In case of emergency stoppage of the conveyer, auxiliary buttons have been provided for the purpose. For the drawing off of gases from the molds after pouring, an exhaust chamber above the conveyer has been arranged.

Annual operation of the suspension conveyer saves the plant about 100,000 rubles in lowered upkeep and repair, and in fewer losses incurred by work stoppage.

In 1948, the plant contemplates substitution of suspension conveyers for ground conveyers in several spots, beginning with the boxless-casting shops.

Multiplace Forms for Molding

In the interests of increased production, bottom boards with a small number of patterns are being replaced by multipattern bottom boards. Quadruple boards are replacing double for molding angle brackets; double are replacing single for flywheels; quadruple are replacing double for upper-packing housings; and octuple are replacing quadruple for rollers, etc.

Thermofixation of Piston Rings

Thermofixation of piston rings has been introduced, completely eliminating warping of the ring. The rings, 60-70 units on a mandrel, are soaked in the furnace for 2 hours at 550 degrees centigrade.

Substitution of Stamped Parts for Cast Parts

Appropriate changes in technological processes have followed successful experiments in the substitution of stamped parts for cast parts. Stamped lower crankcases are already in production. Preparations have been completed for conversion from cast to cold-stamped radiator standpipes. Conversion to cold stamping of lower sumps has cut down labor consumption on that unit by 65 minutes, and the cost 19 percent. Labor consumption in making a set of cast-iron standpipes for a radiator has been reduced by 60 minutes. Cold stamping of flanges and connecting pipes has cut down labor 75 percent, and cost 80 percent.

Increasing the Durability of Tools by Low-Temperature Treatment

Low-temperature tool treatment has been introduced in the plant's tool shop. The production capacity of the setup, which was designed and constructed by the plant, is 2,000 units per shift on a medium-sized cutting tool (photograph available in CIA as Photo Accession No 3360).

The durability of the tool in some cases has trioled (for example, the cutter used in machining T-shaped connecting rods). All cutting tools made of highspeed or EI-262 steel are being subjected to low-temperature treatment.

The cycle of preparing a cutting tool is as follows: (1) preliminary mechanical treatment, (2) hardening by high-frequency current, (3) unipass normal tempering in saline bath, (4) low-temperature treatment, (5) final mechanical machining, (6) cyaniding, and (7) electrochemical finishing.

In the near future we expect to put low-temperature treatment into the production of gauges and other measuring instruments.

Use of Electric Heating for Burning-on Cutting Tools and Tempering of Parts

Burning cutting edges onto cutters, countersinks, and hard-alloy gang cutters is done exclusively with high-frequency currents (photograph of vacuum-tube generator for high-frequency hardening of cutting tools available

CONFIDENTIAL

in CIA as Photo Accession No 3361.) The quality of welding and the durability of the blade in shearing has been considerably increased, and the productivity of burning-on tripled. For some time the tool shop has been studying the possibility of high-frequency current heat treatment of highspeed-steel cutting tools.

In 1947, electrohardening of tractor parts was introduced in the heat-treatment shop of the Stalingrad Tractor Plant, using the Yasnogorodskiy apparatus and high-frequency generators. Electrohardening has already been applied to 15 tractor parts, and by the end of the Five-Year Plan, 70 parts will be electrohardened.

In 1948, we intend to investigate the possibility of converting to high-frequency hardening those parts which are to be changed from casehardened to water-quenched steels. This will result in a great saving of labor since in many cases it will enable us to dispense with casehardening.

New Processes in the Field of Mechanical Machining

Among new processes in mechanical machining adopted by the plant, we should mention shaving of gears and cylinder block faces instead of grinding; superfinishing of piston pins and push rods, high-speed milling of connecting-rod joints and caps, caps of crank bearings; and faces of lugs on rocker arms. Experiments in multistage milling have been begun, and a special cutter has been manufactured and tested.

On 24 December 1947, the 15,000th STZ-NATI tractor came off the reconstructed conveyer of the Stalingrad Tractor Plant.

- E N D -